

REMARKS

Favorable reconsideration of this application is requested in view of the foregoing amendments and the following remarks. Claims 20, 23-32 and 34-47 are pending in this application. Claims 22, 33 and 48-50 are canceled without prejudice or disclaimer. Claims 1-19 and 21 were previously canceled without prejudice or disclaimer.

The claims are amended in order to more clearly define the invention, support for which is found in the figures and related parts of the specification. Support for the amendments to independent claims 20, 35, 36 and 37 is found in dependent claims 22, 33 and 48-50 and in the drawings and text of the specification as originally filed.

Claims 20, 23-32 and 34-47 stand rejected under 35 USC 102(b) as anticipated by Eldridge (US 6110823). Eldridge simply does not disclose or suggest a first vertically aligned carbon nanofiber grown from a first individually electrically addressable electrically conductive interconnect directly connected to the insulating surface of the substrate and a second vertically aligned carbon nanofiber grown from a second individually electrically addressable electrically conductive interconnect directly connected to the insulating surface of the substrate, where the first vertically aligned carbon nanofiber is individually electrically addressable via the first individually electrically addressable electrically conductive interconnect and the second vertically aligned carbon nanofiber is individually electrically addressable via the second individually electrically addressable electrically conductive interconnect.

Eldridge discloses a method of modifying the thickness of a plating on a member by creating a temperature gradient on the member, application for employing such a method, and structures resulting from such a method. The Eldridge reference very briefly mentions "carbon fibers" at column 121, at lines 55-56.

However, the Eldridge reference does not describe or teach carbon nanofibers. The presently claimed nanofiber distinction is important because the instant application solves the problem of connecting carbon nanofibers to an underlying structure. Further, at column 121, about lines 54-56, Eldridge also teaches that the wire 4102 is of any material suitable for being inserted into the mass 4114. The insertion teachings of Eldridge are completely unsuitable for use with the claimed carbon nanofibers. Even if Eldridge taught how to hold a nanofiber (which Eldridge does not teach), the modification of the insertion method of Eldridge to nanofibers would simply result in a broken nanofiber and no connection. In contrast to the insertion teaching of Eldridge, the claimed nanofibers are grown in place as described in detail by the instant application.

Moreover, the Eldridge reference clearly does not describe or teach the vertically aligned aspect of the presently claimed vertically aligned carbon nanofiber (VACNF). The presently claimed vertically aligned carbon nanofibers are enabled by this application via the described plasma assisted chemical vapor deposition process. The presently claimed vertical alignment provides significant advantages that are explicitly described in this application as originally filed. Vertical alignment provides significant field emission (FE) device advantages. Vertical alignment provides significant chemical sensor advantages. Vertical alignment provides significant biological sensor advantages. Please see page 8, line 25 to page 9, line 8 of this application.

The presently claimed invention is not disclosed or suggested by Eldridge because the Eldridge reference does not describe or teach a vertically aligned carbon nanofiber. Eldridge simply does not disclose or suggest a carbon nanofiber, much less how to attach a carbon nanofiber so that it would be vertically aligned.

With regard to claim 25, this dependent claim specifies quartz, sapphire or magnesia. It is noted that Applicant previously deleted silicon from claim 25 in the amendment filed October 29, 2004. Lines 52-56, column 22 of Eldridge describes silicon substrates, but Eldridge does not

disclose or suggest quartz, sapphire or magnesia. Therefore, claim 25 is considered to be separately patentable.

With regard to claim 26, Eldridge does not disclose or suggest an optically transmissive substrate. The silicon substrates of Eldridge are not optically transmissive. Referring to page 4 (section 12) of the action, the Examiner's statement that "Eldridge discloses the substrate being optically transmissive, since it is made of the same material" is clearly erroneous because Eldridge does not disclose or suggest optically transmissive substrates or "the same material." Therefore, claim 26 is considered to be separately patentable.

With regard to claims 28-30, 39-41, 42-44 and 45-47, the passivation layer 124 of Eldridge is clearly not deposited on a portion of a sidewall surface of a vertically aligned carbon nanofiber. In fact, the passivation layer 124 of Eldridge is physically separated from the wire 102 of Eldridge by the conductive layer 126 of Eldridge. Therefore, claims 28-30, 39-41, 42-44 and 45-47 are considered to be separately patentable.

With regard to claim 34, layer 128 of Eldridge is explicitly described as photoresist (see line 61, column 27 of Eldridge) and, therefore, not a conductive structure, much less a parallel lead for active capacitance cancellation. Further, claim 34 specifies that the parallel lead and the electrically conductive interconnect define a plane that is substantially perpendicular to both of the vertically aligned carbon nanofibers. Therefore, claim 34 is considered to be separately patentable.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 20 and 23-24, 27, 31-32 and 35-38 stand rejected under 35 USC 102(b) as anticipated by Simpson (US 6692324). Simpson simply does not disclose or suggest a first vertically aligned carbon nanofiber grown from a first individually electrically addressable electrically conductive interconnect directly connected to an insulating surface of a substrate and a second vertically aligned carbon nanofiber grown from a second individually electrically

addressable electrically conductive interconnect directly connected to the insulating surface of the substrate, where the first vertically aligned carbon nanofiber is individually electrically addressable via the first individually electrically addressable electrically conductive interconnect and the second vertically aligned carbon nanofiber is individually electrically addressable via the second individually electrically addressable electrically conductive interconnect.

Specifically, the nanostructures of Simpson are NOT individually electrically addressable via individually electrically addressable electrically conductive interconnects. In more detail, all of the nanostructures of Simpson are electrically connected to buffer layer 305 and substrate 300. All of the buffer layers 305 and substrates 300 of Simpson are conductive. Therefore, all of the nanostructures of Simpson are at the same voltage potential as buffer layer 305 and substrate 300 and consequently cannot be individually electrically addressable. Moreover, the Simpson reference teaches away from these embodiments of the invention because the Simpson reference teaches a continuous conductive substrate, optionally with a continuous conductive buffer layer, thereby precluding individual addressability.

Applicant notes that claims 25-26, 28-30, 34, 39-41, 42-44 and 45-47 were not rejected in view of Simpson in the action mailed January 25, 2005.

Accordingly, withdrawal of this rejection is respectfully requested.

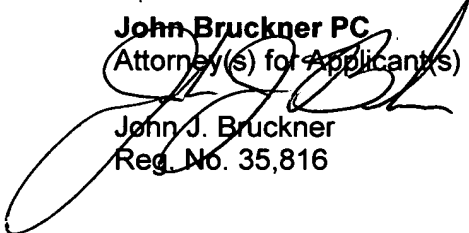
Other than as explicitly set forth above, this reply does not include acquiescence to statements in the Office Action. In view of the above, all the claims are considered patentable and allowance of all the claims is respectfully requested. The Examiner is invited to telephone the undersigned (at direct line 512-394-0118) for prompt action in the event any issues remain that prevent the allowance of any pending claims.

In accordance with 37 CFR 1.136(a) pertaining to patent application processing fees, Applicant requests an extension of time from April 21, 2005 to May 21, 2005 in which to respond to the Office Action dated January 21, 2005. A notification of extension of time is filed herewith.

The Director of the U.S. Patent and Trademark Office is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-3204 of John Bruckner PC.

Respectfully submitted,

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